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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,825	02/18/2005	Hidetsugu Ikeda	285358US0PCT	1651
22850	7590	09/29/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CROUSE, BRETT ALAN	
			ART UNIT	PAPER NUMBER
			1794	
			NOTIFICATION DATE	DELIVERY MODE
			09/29/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/524,825	Applicant(s) IKEDA ET AL.	
	Examiner Brett A. Crouse	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9 and 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080812;20080728;20080206;20080128</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 28 July 2008 has been entered.

Claims 1, 2, 4, 5-9, 11-15 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 6, 7, 14 and 15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shi et al., EP 1,009,044.

Shi teaches:

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As to claims 6, 7, 14 and 15:

Paragraph [0010], formula (I), teaches an anthracene derivative of formula (I) for an electroluminescent device.

Paragraph [0011], formulae (VI), (VII), (X), (XI), teach derivatives of formula (I) which meet the limitations of general formulae (1) and (2) of claims 6, 14 and 15 of the instant invention. Formulae (X) and (XI) meet the limitations of formulae (1) and (2) when R₃ is aryl as provided for in the description of formula (1), paragraph [0010] and line 58, page 6, paragraph [0011]. Additionally, formulae (VI), (VII), (X), and (XI) provide substituted or unsubstituted naphthalene groups.

Paragraph [0026], attention is directed to compounds 47, 48, 50, 51, 52, 54, 55, 56, and 57.

In the alternative:

If it is found that the teaching of an aryl substituent as R₃ in formulae (X, XI) fails to render the claim anticipated. It would have been obvious to one of ordinary skill in the art to select an aryl group for the substituent R₃ in formula (X, XI) of Shi with the expectation that the resulting compound would function as a charge transport material in the device of Shi as suggested by Shi in the description of R₃ and formula (X, XI).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 6-9, 11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247.

Shi '721 teaches:

Column 1, lines 49-51, teach the compound 9,10-diphenyl anthracene as a blue emitting material with near unity fluorescence quantum efficiency.

Column 2, lines 15-63, teach 9,10-dinaphthyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

Columns 11-16, compounds 14-23, provide examples of aryl substituents upon naphthyl groups bonded to the anthracene ring.

Column 48, lines 17-18, teach arylamines as dopants in the light emitting layer.

Shi '721 does not teach:

Shi '721 does not teach a central anthracene group which is 9,10 substituted in which one substituent is phenyl and one substituent is naphthyl.

Shi '247 teaches:

Column 2, line 9 through column 3, line 4, teaches a 9,10-diphenyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

It would have been obvious to one of ordinary skill in the art based on substituted dinaphthyl anthracene (N-A-N) derivatives used as blue emissive materials for the light

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emitting layer of an electroluminescent device and substituted di-phenyl anthracene (P-A-P) derivatives of used a blue emissive materials for the light emitting layer of an electroluminescent device that the replacement of one of the naphthyl groups of Shi '721 with a substituted phenyl group of Shi '247 would result in a 9,10-di-substituted anthracene compound (N-A-P) that would also have similar fluorescent properties as emissive materials for the light emitting layer of an electroluminescent device.

6. Claims 1, 2, 4, 8, 9, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2 as applied to claim 6, 7, 14 and 15 above, and in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247.

The teaching of Shi (EP) as in the rejection above are relied upon.

As to claims 1, 2, 8, 9, and 13:

Shi (EP) teaches:

Paragraph [0010], teaches that is an object of the invention to provide an anthracene derivative of formula (I) for use in the hole transport layer of an electroluminescent device. The passage also recites a multilayer device structure including an anode, cathode, and a plurality of layers in which the anthracene compound of formula (I) is used.

Shi (EP) does not teach:

Shi (EP) teaches the anthracene derivative of his invention as hole transport materials. Shi does not teach compounds of formula (I) as light emitting materials. However, Shi

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(EP) does teach anthracene derivatives as dopants in the light emitting layer of an electroluminescent device.

Shi '721 teaches:

Column 2, lines 15-63, teach 9,10-dinaphthyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

Columns 11-16, compounds 14-23, provide examples of aryl substituents upon naphthyl groups bonded to the anthracene ring.

Shi '247 teaches:

Column 2, line 9 through column 3, line 4, teaches a 9,10-diphenyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

It would have been obvious to one of ordinary skill in the art to expect that anthracene derivatives of Shi (EP) would provide suitable and desirable fluorescent properties to an electroluminescent device of Shi when used as fluorescent materials in the light emitting layer as taught and suggested by Shi '721 and Shi '247 due to their structural similarity with the compounds of Shi '721 and Shi '247. Shi '721 teaches a N-A-N substitution pattern and Shi '247 teaches a P-A-P substitution pattern. One of ordinary skill in the art would recognize that a N-A-P substitution pattern, as in Shi (EP), would result in compounds having similar fluorescent properties that would be useful as emissive

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materials as suggested in paragraph [0035] of Shi (EP) and taught for the anthracene derivatives of Shi '721 and Shi '247.

As to claims 4 and 11:

Shi (EP) teaches:

Paragraph [0032], teaches a preferred electroluminescent device structure which comprises a hole transport layer, emissive layer, electron transport layer.

Paragraph [0035], teaches that arylamines can be preferably used as dopants in the light emitting layer.

Shi does not teach:

Shi does not provide an experimental example of a device having an arylamine in the emissive layer. However, Shi does provide examples of the preferred device structure having a hole transport layer, emissive layer, electron transport layer in which the emissive layer comprises a dopant.

It would have been obvious to one of ordinary skill in the art use an arylamine compound in the light emissive layer of the preferred device structure of Shi as a dopant material as taught by Shi.

7. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2 as applied to claim 6, 7, 14 and 15 above, and in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247, as applied to claims 1, 2, 4, 8, 9, 11, and 13 above, and further in view of Ikeda et al., JP 2001-097897 hereinafter known as Ikeda.

The teachings of Shi as in the rejections above are relied upon.

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Shi does not teach:

Shi does not provide an example of styryl amines as a component in the luminescent layer of an electroluminescent device. However, Shi does teach the use of aryl amines in the luminescent layer of an electroluminescent device.

Ikeda teaches:

Paragraphs [0008]-[0015], teach compounds of general formula (I) for use in electroluminescent devices. Paragraph [0014], section [2], provides a device structure of at least one organic luminous layer inter-electrode, wherein said layer comprises a compound of formula (I). Paragraph [0014], section [5], additionally teaches that the organic luminous layer can additionally comprise a recombination site morphogenetic substance. This is held to teach that the luminous layer can comprise multiple materials such as dopants. Paragraph [0014], section [7], teaches that the luminous layer can comprise a styryl amine as the recombination site morphogenetic substance.

Paragraphs [0018]-[0034], provide an expanded description of compounds embodied by general formula (I). Paragraph [0020], provides groups represented by Ar₁ including anthracene. Paragraph [0024], teaches that at least one of Ar₂ and Ar₃ of general formula (I) is a naphthyl derivative. Paragraphs [0027]-[0028], teach that the naphthyl derivative can comprise additional fused rings. Examples are provided in paragraph [0028] and include naphthyl and fluoranthenyl.

Paragraphs [0120]-[0127], examples, teach electroluminescent devices having a compound of formula (I) and a styryl amine having the structure equivalent to a triarylamine with a styryl substituent (PAVB) as a component of the light emitting layer.

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It would have been obvious to one of ordinary skill in the art to incorporate a styryl amine, such as (PAVB), as taught by Ikeda and provided in the examples of Ikeda into the device of Shi as component of the light emitting layer with the expectation of success in forming an electroluminescent device.

8. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247, as applied to claims 1, 2, 4, 6-9, 11, and 13-15 above, and further in view of Ikeda et al., JP 2001-097897 hereinafter known as Ikeda.

The teachings of Shi as in the rejections above are relied upon.

Shi does not teach:

Shi does not provide an example of styryl amines as a component in the luminescent layer of an electroluminescent device. However, Shi does teach the use of aryl amines in the luminescent layer of an electroluminescent device.

Ikeda teaches:

Paragraphs [0008]-[0015], teach compounds of general formula (I) for use in electroluminescent devices. Paragraph [0014], section [2], provides a device structure of at least one organic luminous layer inter-electrode, wherein said layer comprises a compound of formula (I). Paragraph [0014], section [5], additionally teaches that the organic luminous layer can additionally comprise a recombination site morphogenetic substance. This is held to teach that the luminous layer can comprise multiple materials such as dopants. Paragraph [0014], section [7], teaches that the luminous layer can comprise a styryl amine as the recombination site morphogenetic substance.

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Paragraphs [0018]-[0034], provide an expanded description of compounds embodied by general formula (I). Paragraph [0020], provides groups represented by Ar₁ including anthracene. Paragraph [0024], teaches that at least one of Ar₂ and Ar₃ of general formula (I) is a naphthyl derivative. Paragraphs [0027]-[0028], teach that the naphthyl derivative can comprise additional fused rings. Examples are provided in paragraph [0028] and include naphthyl and fluoranthenyl.

Paragraphs [0120]-[0127], examples, teach electroluminescent devices having a compound of formula (I) and a styryl amine having the structure equivalent to a triarylamine with a styryl substituent (PAVB) as a component of the light emitting layer. It would have been obvious to one of ordinary skill in the art to incorporate a styryl amine, such as (PAVB), as taught by Ikeda and provided in the examples of Ikeda into the device of Shi as component of the light emitting layer with the expectation of success in forming an electroluminescent device.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

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ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 2, 4-9, and 11-15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 7, 8, and 10 of copending Application No. 11/282,818. Although the conflicting claims are not identical, they are not patentably distinct from each other because the compounds and their use in an electroluminescent device significantly overlap the claims of the instant invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 2, 4-9, and 11-15 are directed to an invention not patentably distinct from claims 1-5, 7, 8, and 10 of commonly assigned Application No. 11/282,818. Specifically, although the conflicting claims are not identical, they are not patentably distinct for the reasons set forth in paragraph 10 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 11/282,818, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the

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assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

The double patenting rejection will not be held in abeyance.

Response to Arguments

11. Applicant's arguments have been fully considered but they are not persuasive.

With respect to the 102(b) rejection over Shi et al., EP 1,009,044 applicant argues the disclosure of Shi with respect to formulae (X, XI) is too broad to anticipate the claimed anthracene compounds. The examiner respectfully disagrees. The range of the number of carbon atoms taught by Shi for aryl groups is smaller than that contemplated by applicant. Shi also provides example compounds in which R₃ is an aryl group which meets the carbon number range of the instant claims.

With respect to the 102(b) rejection over Shi et al., EP 1,009,044 applicant also argues the compounds of Shi are directed to hole transport materials. This is/was addressed in the 103(a) rejection. With regard to the 102(b) rejection the reference is not applied to claims requiring the

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materials be in the light emitting layer. Claim 6, 14 and 15 are directed only to a compound and claim 7 specifies only an electroluminescent device comprising the compound.

With respect to the 102(b) rejection over Shi et al., EP 1,009,044 applicant also argues the example compounds cited teach that two R3 group must be present. Paragraph [0011] includes formulae (VI) and (VII) in addition to (X) and (XI). The cited compounds meet the limitations of formula (1) of the instant claims and formula (VI) and (VII) of Shi. These compounds in no way negate the teachings of Shi with respect to formulae (X) and (XI).

With respect to the rejection over Shi '721 in view of Shi '247 applicant argues that there is no motivation to combine the references to arrive at the compounds of the instant invention. The examiner respectfully disagrees. Shi '721 teaches in the background that 9,10-diphenyl anthracene is a known blue emitting compound having high quantum efficiency. Shi '721 extends this teaching to include substituted 9,10-dinaphthyl anthracene compounds. Shi '247 also teaches substituted 9,10-diphenyl anthracene as blue emitting compounds. One of ordinary skill in the art would expect that the substitution of a phenyl group with a naphthalene group or the substitution of a naphthalene group with a phenyl group from a known blue emitting compound to a known blue emitting compound would result in a blue emitting compound.

With respect to the rejection over Shi '721 in view of Shi '247 applicant also argues that unexpected results are shown in the experimental results of the instant specification. Applicant points to example 13 compound AN5 opposite (DNA), 9,10-dinaphthyl anthracene, (an1) of the comparative example. This is not found persuasive as the DNA does not have the substituents of AN5 thus not allowing a direct comparison. It is noted however, that the half life of example 13

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and of comparative example 1 are both 2,200 hours. Applicant is invited to provide such a showing opposite the skeletons of Shi '721 and Shi '247.

With respect to the 103(a) rejection over Shi (EP) over Shi '721 and Shi '247 applicant argues that Shi (EP) is directed to hole transport materials and as such there would be a lack of motivation to combine the reference with those directed to anthracene derivatives in the light emitting layer. The examiner respectfully disagrees. Shi (EP) teaches both symmetric and asymmetric anthracene derivatives. Compounds of Shi (EP) overlap compounds of both Shi '721 and Shi '247. One of ordinary skill in the art would recognize the overlap of the diphenyl and dinaphthyl anthracenes of Shi (EP) with the other Shi references and would recognize the structural similarity of the asymmetric compounds of Shi (EP) with the compounds of the other references providing an expectation that the compounds of Shi (EP) would function as blue emitting materials in an electroluminescent device.

With respect to the rejection over Shi (EP) in view of Shi '721 and Shi '247 and Ikeda, applicant argues that Ikeda should not be combined with the Shi references because it does not teach a styrylamine in combination with an anthracene derivative. The examiner respectfully disagrees. Ikeda teaches in the examples of compounds of formula (I) symmetric and asymmetric anthracene derivatives. Ikeda also teaches the use said derivatives with styrylamines in the light emitting layer. The Shi reference provides a teaching of aryl amines with anthracene derivatives and as such one of ordinary skill in the art would recognize the styryl amines of Ikeda would provide the functionality of the aryl amines recited by Shi.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald L. Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./

Examiner, Art Unit 1794

/Callie E. Shosho/

Supervisory Patent Examiner, Art Unit 1794